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PATENTKANTOOR

REPUBLIC OF SOUTH AFRICA

DEPARTEMENT VAN  
HANDEL EN NYWERHEID



Rec'd PCT/AUTO 15 JUL 2004

PCT / JB 5 / 00026

Certificate

13 JAN 2003

PATENT OFFICE

REPUBLIEK VAN SUID-AFRIKA

DEPARTMENT OF TRADE  
AND INDUSTRY

Hiermee word gesertifiseer dat  
This is to certify that

REC'D 16 JAN 2003  
WIPO PCT

The documents annexed hereto are true copies of:

Application forms P.1 and P2, provisional specification and drawings  
of South African Patent Application No. 2002/0328 as originally filed  
in the Republic of South Africa on 15 January 2002 in the name of  
EXERSENSE CONSULTING CC for an invention entitled: "VALVE UNIT".

Getekende

PRETORIA in die Republiek van Suid-Afrika, hierdie  
in the Republic of South Africa, this

12th

dag van  
day of December 2002

Registrateur van Patente  
Registrar of Patents

**PRIORITY DOCUMENT**  
SUBMITTED OR TRANSMITTED IN  
COMPLIANCE WITH  
RULE 17.1(a) OR (b)

REPUBLIC OF SOUTH AFRICA

## REGISTER OF PATENTS

Official Application No.	Lodging date: Provisional			Acceptance date:	
21 01 2002 / 0328	22	2002-01-15		47	
International Classification:	Lodging date: Complete			Grant date:	
51	22				
Full name(s) of applicant(s)/Patentee(s):					
71 Exersense Consulting CC					
Applicants substituted	Date registered				
71					
Assignee(s):	Date registered				
71					
Full name(s) of inventor(s):					
72 Jacobus Adriaan WESSELS Marius Okkert VERMEULEN Frank Robert MULLER					
Priority claimed	33	Country	31	Number	32 Date
Title of invention					
54 VALVE UNIT					
Address of applicant(s)/patentee(s):					
32 Camdebo Street Loevenstein Bellville 7550					
Address for service	Dr GERNTHOLTZ (DrG Ref: 599714)				
74	30 UNION ROAD MILNERTON / CAPE 7441	P O BOX 8 CAPE TOWN 8000	TEL: (021) 551 2650 FAX: (021) 551 2960 / 551 2974 E-MAIL: gerpat@iafrica.com		
Patent of addition No.	74	Date of any change			
Fresh application based on		Date of any change			

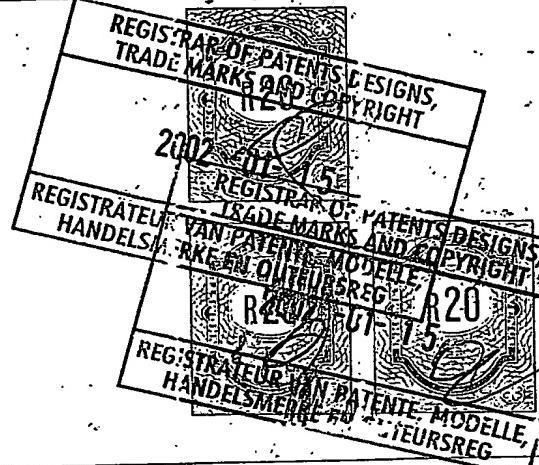
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**REPUBLIC OF SOUTH AFRICA  
PATENTS ACT, 1978**

**PATENT APPLICATION AND ACKNOWLEDGEMENT**

[Section 30(1) - Regulation 22]

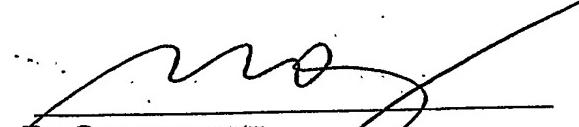
The grant of a patent is hereby requested by the undermentioned applicant on the basis of the present application filed in duplicate.

21	01	Official Application No.: <b>2002/0328</b>	DrG Ref.: 599714
71 Full name(s) and address(es) of applicant(s):		 Exersense Consulting CC 32 Camdebo Street Loevenstein Bellville 7550	
54 Title of invention:		VALVE UNIT	
The applicant claims priority as set out on the accompanying form P2. The earliest priority claimed is:			
This application is for a patent of addition to Patent Application No.		21	01
This application is a fresh application (section 37) based on Application No.		21	01

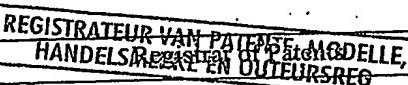
**THIS APPLICATION IS ACCCOMPANIED BY THE FOLLOWING:**

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> 1. P6 Provisional specification<br><input type="checkbox"/> P7 Complete specification  | Pages: <b>8</b><br>Pages: _____   2 copies |
| <input checked="" type="checkbox"/> 2. Drawings<br><input type="checkbox"/> 3. P8 Publication particulars and abstract in duplicate.<br><input type="checkbox"/> 4. Drawing for abstract<br><input type="checkbox"/> 5. An assignment of invention<br><input type="checkbox"/> 6. Certified priority document(s)   |  |
| <input type="checkbox"/> 7. Copy of Form P2 and SA Patent Application No<br><input type="checkbox"/> 8. Translation of the priority document(s)<br><input type="checkbox"/> 9. An assignment of priority rights  |  |
| <input checked="" type="checkbox"/> 10. P3 Declaration and power of attorney on form P3<br><input type="checkbox"/> 11. P4 Request for ante-dating on form P4<br><input type="checkbox"/> 12. P4 Request for classification on form P9<br><input checked="" type="checkbox"/> 13. P2 Register sheet (in duplicate) |  |

Date: 15 January 2002

  
**DR GERNTHOLTZ**  
PATENT ATTORNEYS OF APPLICANT(S)

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 Received _____ Official date stamp <b>2002 -01- 15</b>	
	

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## DECLARATION AND POWER OF ATTORNEY

[Section 30 - Regulations 8, 22(1)(C) and 33]

21	01	Patent/Application No.:	<b>2002 / 0328</b>		DrG Ref.:	599714	
22		Lodging Date:	2002-01-15				
71	Full name(s) of applicant(s):  Exersense Consulting CC						
72	Full name(s) of inventor(s):  Jacobus Adriaan WESSELS Marius Okkert VERMEULEN Frank Robert MULLER						
Earliest priority claimed		33	Country	31	Number	32	Date
54	Title of Invention:  VALVE UNIT						

I/We hereby declare that:

1.  (Applicant(s) = Inventor(s))

I/We am/are the inventor(s) of the abovementioned invention and the applicant(s) mentioned above and have knowledge of the facts herein stated in my/our capacity as inventor(s) and applicant(s).

- (Applicant(s) = Assignee(s) of inventor(s))

The inventor(s) of the abovementioned invention is/are the person(s) named above; and the applicant(s) has/have acquired the right to apply by virtue of an assignment from the inventor(s).

I/We have been authorised by the applicant(s) to make this declaration and have knowledge of the facts herein stated in my/our capacity as indicated below.

2.  To the best of my/our knowledge and belief, if a patent is granted on the application, there will be no lawful ground for the revocation of the patent.
3.  This is a convention application and the earliest application from which priority is claimed as set out above is the first application in a convention country in respect of the invention claimed in any of the claims.
4.  The partners and the qualified staff of the firm of DR GERNTHOLTZ, Patent Attorneys, Cape Town are authorised, jointly and severally, with powers of substitution and revocation, to represent the applicant(s) in this application and to be the address for service of the applicant(s) while the application is pending and after a patent has been granted on the application.

Signature: 1. .... 2. .... 3. ....

Name: J. A. Wessels

Please print name of signatory in block letters.

Capacity: Member

Please indicate capacity(e.g. president, director, secretary) of signatory if signing on behalf of a company or corporation or any other legal body.

Date: 15 January 2002

Place: Cape Town

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## FORM P6

REPUBLIC OF SOUTH AFRICA  
PATENTS ACT, 1978  
PROVISIONAL SPECIFICATION

[Section 30(1) - Regulation 27]

21	01	Official Application No.: <b>2002 / 0328</b>	DrG Ref.: 599714
22	Lodging date:	2002 -01- 15	
71	Full name(s) of applicant(s): Exersense Consulting CC		
72	Full name(s) of inventor(s) Jacobus Adriaan WESSELS Marius Okkert VERMEULEN Frank Robert MULLER		
54	Title of invention VALVE UNIT		

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DrG REF: 599714

**TITLE OF INVENTION**

Valve unit.

**FIELD OF INVENTION**

5 The present invention relates to a valve unit.

More particularly, the present invention relates to a valve unit for dispensing paste materials.

**BACKGROUND TO INVENTION**

It is often desirable to obtain a fixed volume of substance out of a tube or  
10 bottle. When working with liquids, a fixed volume can be relatively easily measured off in a syringe or a measuring cup. However these measuring devices cannot be easily used with pastes, creams, salves or other high viscosity substances, which are not readily flowable.

It is an object of the invention to suggest a valve unit, which will assist in  
15 overcoming these problems.

**SUMMARY OF INVENTION**

According to the invention, a valve unit includes a body defining a cavity having a predetermined volume; charging means for filling the cavity with a flowable substance; and discharging means for exhausting the substance from  
20 the cavity.

Also according to the invention, a valve unit includes a body; a movable member movably associated with the body; a first passage extending through the body; a second passage extending through the movable member, the

second passage being adapted to be alignable with the first passage; and a control member movably located inside the second passage, the control member being adapted to regulate the filling of and the exhausting of a flowable substance from the second passage through the first passage.

5 The movable member may be located in a recess in the body.

The recess may be a bore.

The bore may be located centrally within the body.

The body may be cylindrical.

The first passage may extend through the body traversing the bore along a diameter of the bore.

The movable member may be a spigot rotatably located in the recess.

The spigot may have a diameter substantially similar to the diameter of the bore.

The spigot may have an outward flange at its end protruding from the recess.

15 The second passage may extend through the spigot having openings on opposite sides of a diameter of the spigot.

The second passage may have a slightly larger diameter than the first passage.

The control member may be adapted to block off the first passage when moved into contact with the body.

20 The control member may be a spherical ball.

The ball may have a diameter substantially similar to a diameter of the second passage.

The ball may have a diameter larger than a diameter of the first passage.

The valve unit may include connection means for joining the body to a supply of substance, e.g. a tube of paste.

The connection means may be a screw or clip-on connection.

5 The valve unit may include alignment means adapted to align the first and second passages so that they are continuous with each other.

The alignment means may include a groove provided in the body and being adapted to accept a pin extending from the flange of the spigot, or *vice versa*.

The groove may describe a substantially arcuate path parallel to a diameter of 10 the bore.

The groove may extend though substantially 180°.

Further according to the invention, a method of dispensing a substance includes the steps of providing a valve unit having a body defining a recess with a first passage extending through the body, the first passage having a inlet and 15 an outlet; of providing a movable member movably located in the recess with a second passage extending through the movable member, the second passage being adapted to be alignable with the first passage; of providing a control member movably located inside the second passage; of joining the valve unit to a supply of a substance; of expressing a first volume of the substance into 20 the valve unit until the second passage is filled therewith and the control member abuts against the body near the outlet of the first passage; of moving the movable member relative to the body so that the control member abuts against the body near to the inlet of the first passage; and of exhausting the first volume of substance from the valve unit by expressing a further volume of 25 the substance into the valve unit until the second passage is filled therewith so

that the control member abuts against the body near the outlet of the first passage, the control member simultaneously acting to exhaust the first volume from the valve unit.

#### BRIEF DESCRIPTION OF DRAWINGS

5 The invention will now be described by way of example with reference to the accompanying schematic drawings.

In the drawings there is shown in:

Figure 1 a perspective view of a valve unit in accordance with the invention;

10 Figure 2 an exploded perspective view of the valve unit shown in Figure 1;

Figure 3 a side view of a body of the valve unit seen along arrow III in Figure 2;

Figure 4 a plan view of the body of the valve unit seen along arrow IV in Figure 3;

15 Figure 5 a side view of a spigot of the valve unit seen along arrow V in Figure 2;

Figure 6 a bottom view of the spigot seen along arrow VI in Figure 5;

Figure 7 a plan view of the valve unit shown in Figure 1, shown joined to a supply of a substance;

20 Figure 8 a plan view of the valve unit shown in Figure 7, shown charged or filled with substance;

Figure 9 a plan view of the valve unit shown in Figure 7, shown ready to discharge the substance ; and

Figure 10 a plan view of the valve unit shown in Figure 7, shown after discharging the substance.

## 5 DETAILED DESCRIPTION OF DRAWINGS

Referring to Figures 1 and 2, a valve unit in accordance with the invention, generally indicated by reference numeral 20, is shown. The valve unit 20 includes a body 22, a spigot 24 movably joined to the body 22, and a control member in the form of a ball 26 movably associated with the spigot 24.

10 As shown in Figures 3 and 4, the body 22 is cylindrical in shape and defines a centrally located cylindrical bore 28. A first passage 30, having an inlet 32 and an outlet 34, extends through the body 22 traversing the bore 28 along a diameter of the bore 28. An internal screw thread 36 is provided in the passage 30 extending from the inlet 32 for joining the valve unit 20 to a supply source 15 during use. The body 22 further is provided with an arcuate guide groove 38, which extends through substantially 180°.

Referring now to Figures 5 and 6, the spigot 24 has a diameter substantially similar to the diameter of the bore 28 and is rotatably located therein. The spigot 24 has an outward flange 40 at its end protruding from the bore 28. A 20 second passage 42 extends through the spigot 24, the second passage 42 having openings on opposite sides of a diameter of the spigot 24. This allows the second passage 42 to be aligned with the first passage 30. The diameter of the second passage 42 is slightly larger than the diameter of the first passage 30. A pin 44 extends from the flange 40 into the groove 38.

The control member 16 is a spherical ball having a diameter substantially similar to a diameter of the second passage 42 and larger than a diameter of the first passage 30.

Referring now to Figures 7 to 10, in use, the valve unit 20 is joined to supply source, such as a tube 46 of paste. The spigot 24 is rotated so that the first and second passages 30,42 are in alignment, i.e. when the pin 44 is at one end of the groove 28 (as shown in Figure 7). By pressing the tube 46, a first volume of paste 48 is expressed into the second passage 42 of the valve unit 20 (as shown in Figure 8). Once the second passage 42 is filled with the paste 48, the ball 26 abuts against the body 22 near the outlet 34. This closes off the first passage 30 and prevents further paste 48 from being expressed from the tube 46.

As shown in Figure 9, the spigot 24 is rotated relative to the body 22 in the direction of arrow 50 until the first and second passages 30,42 are again aligned, i.e. with the pin 44 being located at an opposite end of the groove 28.

The ball 26 thus abuts against the body 22 near to the inlet 32 of the first passage 30.

Finally, the first volume of paste 48 is exhausted from the valve unit 20 by expressing a further volume of paste 52 into the valve unit 20. As the second volume of paste 52 enters the second passage 42, it moves the ball 26 until it again abuts against the body 22 near the outlet 34. Simultaneously, the ball 26 acts to exhaust the first volume of paste 48 from the second passage 42.

Additional volumes of paste can be obtained by repeating the above steps as often as required.

The volume of paste remaining in the first passage 30 can be reduced by shortening its length, e.g. by cutting away a part of the body 22.

2002/0328

The valve unit 20 can be manufactured by injection moulding from plastics material.

Date: 7 January 2002

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2002/0328

EXERSENSE CONSULTING CC

NO OF SHEETS 3  
SHEET NO 1  
DRG Ref.: 599714

FIG. 1

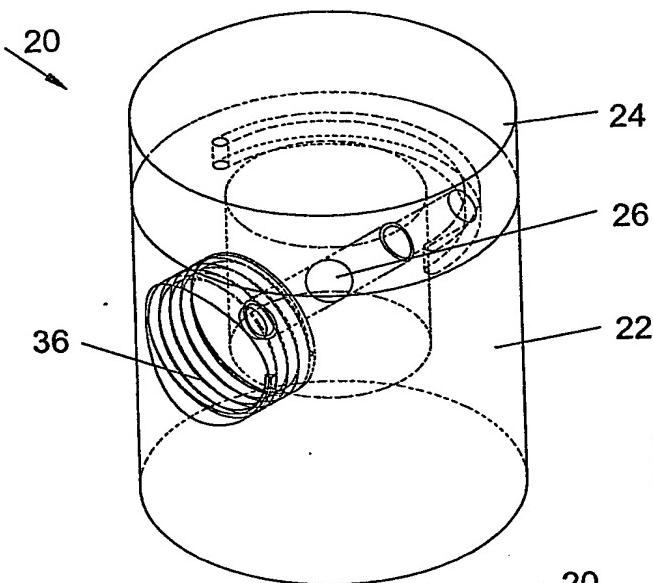
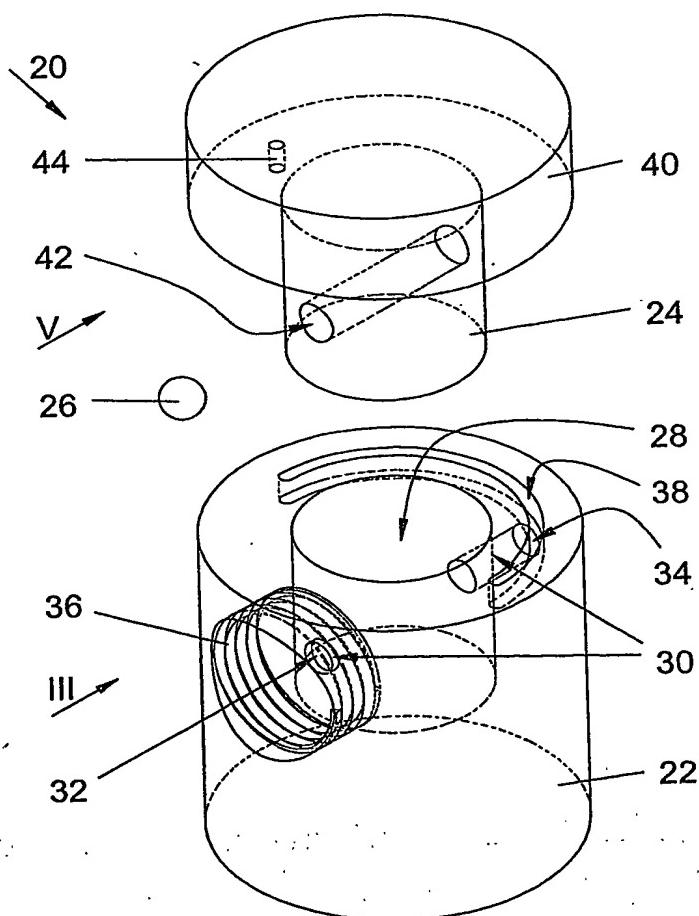


FIG. 2



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SHEET NO 2  
DRG Ref.: 599714

FIG. 3

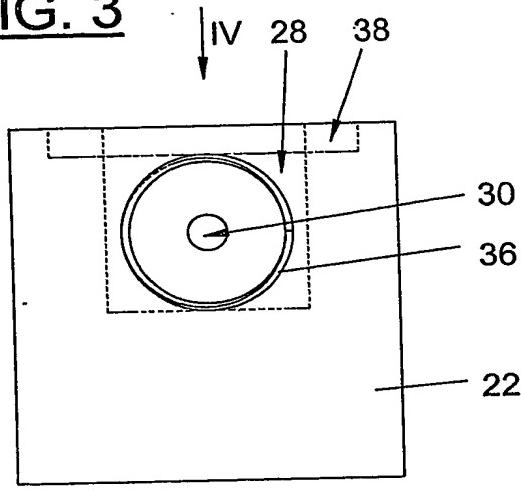


FIG. 4

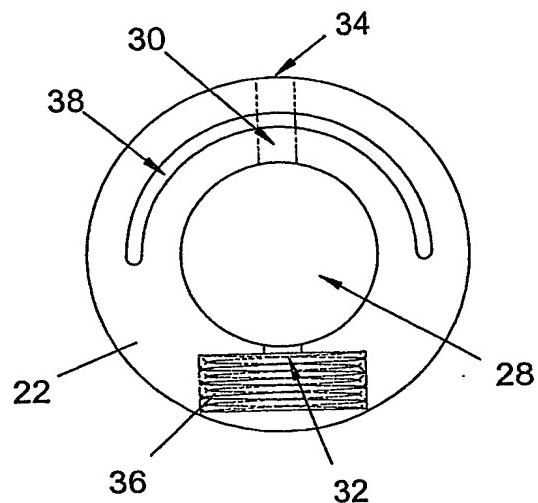


FIG. 5

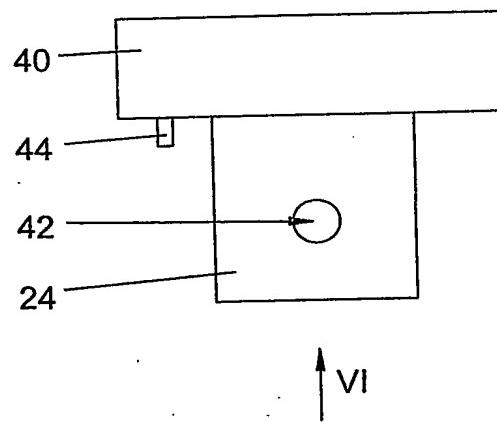
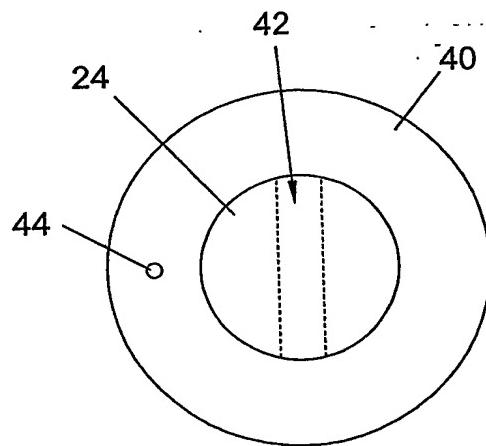


FIG. 6



2002/0328

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NO OF SHEETS 3  
SHEET NO 3  
DRG Ref.: 599714

FIG. 7

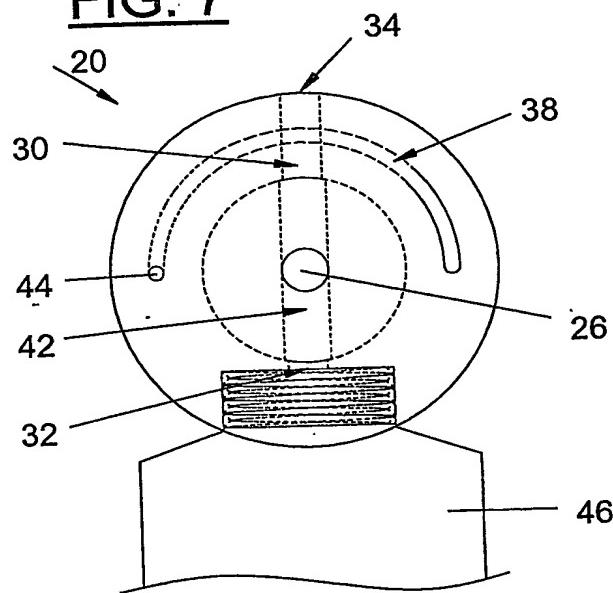


FIG. 8

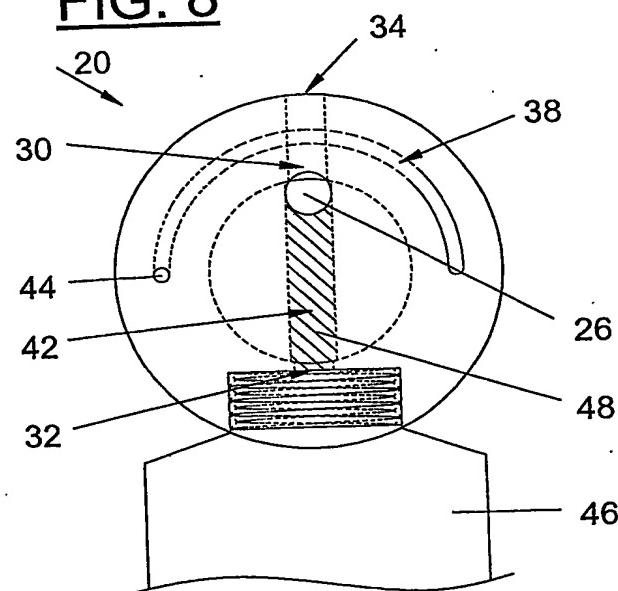


FIG. 9

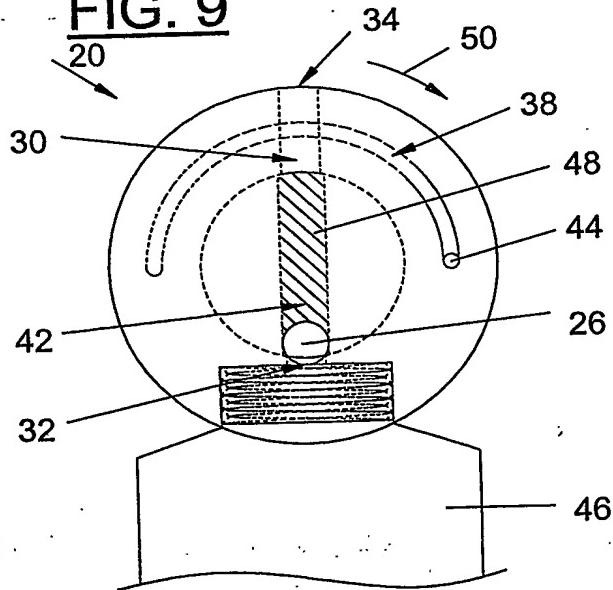


FIG. 10

